

Missouri Childhood Lead Poisoning Prevention Program

Annual Report for Fiscal Year 2018

July 1, 2017 – June 30, 2018



Missouri Department of Health and Senior Services

<http://health.mo.gov/living/environment/lead/index.php>

573-751-6102 or 866-628-9891

Missouri Childhood Lead Poisoning Prevention Program (CLPPP)

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This report meets the statutory mandate for an annual report per §701.343, RSMo.

About Our Program

PROGRAM MISSION

The Missouri Department of Health and Senior Services (DHSS) Childhood Lead Poisoning Prevention Program's (CLPPP) mission is to assure the children of Missouri a safe and healthy environment through primary prevention and the identification of lead exposures that may cause illness or death.

The DHSS CLPPP was established in 1993 and continues to assure that health care providers have current information and tools available to screen patients less than six years of age for lead and provide primary prevention education.

The DHSS CLPPP is staffed by the following positions: a Program Manager, a Senior Office Support Assistant, a Research Analyst, a Health Program Representative, two Data Entry Personnel, seven Environmental Specialists, and a Public Health Consultant Nurse. State guidelines describe appropriate follow-up of children with elevated blood lead levels (EBL) of at least 10 micrograms per deciliter (10 µg/dL). Based on the 97.5th percentile of the blood lead level distribution among children one to five years old in the United States, the current Centers for Disease Control and Prevention (CDC) reference level is set at ≥ 5 µg/dL. CLPPP has been working to identify ways to provide services based on CDC's reference level. DHSS staff currently notifies all Local Public Health Agencies (LPHAs) and Managed Care health plans when a blood lead level is received regardless of the level. This ensures LPHAs and health plans are aware of all the children's blood lead level results and can discuss what actions will follow if any.

Follow-up activities and case management are generally provided for children six years and younger with an EBL ≥ 10 µg/dL. These activities help the family understand the causes and health effects of childhood lead poisoning. Environmental risk assessments are required per statute to be performed to identify potential sources of lead exposure for children with an EBL ≥ 15 µg/dL. While not required by statute, CLPPP also offers environmental risk assessments for children with an EBL ≥ 5 µg/dL. These risk assessments provide the family with information about where lead hazards exist in and around their home. A work plan is developed to reduce these hazards and the risks associated with them. By reducing or eliminating exposures to the environmental sources of lead, the child's blood lead level should decrease and repeated elevations should be prevented. Parents with elevated blood lead children less than three years of age are also provided with "First Steps" pamphlet. A DHSS produced Lead Fact Sheet and CDC's "Protect Your Family from Lead" booklet are mailed to families of children who have been identified with having a lead level of 5 µg/dL to 9.9 µg/dL to provide information on lead poisoning and prevention. These pamphlets and booklets are also given to the parents during risk assessments for blood lead levels equal to or greater than 5 µg/dL.

Lead poisoning prevention educational materials are provided to Missouri citizens at various community venues. DHSS works with LPHAs, the medical community, other state agencies, businesses, schools, and community organizations to prevent childhood lead poisoning. The DHSS CLPPP created a mascot to promote lead poisoning prevention messages called Ledy. The costume may be loaned to any organization in Missouri wanting to increase lead poisoning prevention education and blood lead testing.

The program currently uses the Missouri Health Strategic Architectures and Information

Cooperative (MOHSAIC) database to collect lead-specific data from medical and lead program activities. This database is part of an electronic health records system to provide documentation of medical testing, case management, and environmental risk assessments statewide. The data is used to provide comprehensive lead case management services and for statistical information. All child and adult lead test information is tracked in MOHSAIC.

Lead Poisoning in Missouri

Lead poisoning is one of the most common and preventable environmental health problems today. Almost a quarter million children in the United States are estimated to have an EBL level of at least a 10 µg/dL. According to Missouri blood lead testing data for July 1, 2017, through June 30, 2018, there were 517 children under the age of six identified with EBL levels of at least 10 µg/dL (0.62 percent of the 83,681 children tested that year). There were 2,553 children with a level of at least 5 µg/dL equating to 3.05 percent.

The primary lead hazard to children in Missouri is deteriorated lead-based paint. Lead-based paint was banned for residential use nationwide in 1978. Any home built before 1978 may contain lead-based paint. The highest risk of lead exposure for children is found in homes built before 1950, when most paint contained a high percentage of lead. More than 21 percent of the housing stock in Missouri was built before 1950 (see page 5).

Lead mining and smelting are an important part of Missouri's history. Lead in Missouri was first discovered along the Meramec River by French explorers in the 1700's while searching for gold and silver. Missouri became the dominant lead-producing state in the nation in 1907. It has remained so ever since. Most early lead production came from the Old Lead Belt district of southeast Missouri in the Park Hills-Bonne Terre area, and in the Tri-State Zinc-Lead district in southwest Missouri around Joplin. Today, all of the state's lead production comes from the New Lead Belt, also known as the Viburnum Trend district. This district is a very narrow, 35-mile-long ore area extending southward from the town of Viburnum, Iron County, in southeast Missouri. Mining waste products in these areas have been found in driveways, yards, and even children's play areas. Dust, air, and soil around mining activity have consistently shown elevated levels of lead contamination.

Lead is a shiny, silver-colored metal found naturally in the earth's crust. Lead has historically been used in a variety of ways including in paints, gasoline, batteries, bullets, keys, and some vinyl products such as mini-blinds. Fine particles of processed or recycled lead and/or lead dust become a health hazard when they are taken into the body through inhalation (breathing) and/or ingestion (swallowing).

Lead affects almost every organ and system in the body. The effects of lead are the same whether it is inhaled or ingested and can damage the brain, central nervous system, kidneys, and immune system. Lead in the human body is most harmful to young children under six years of age, and is especially detrimental to children less than three years of age because their systems are developing rapidly.

A blood test is used to determine lead levels in the body. Lead can be measured in blood drawn from a vein or capillary (finger stick). Blood lead levels are measured and reported as micrograms of lead per deciliter of whole blood (µg/dL).

Statewide Screening Plan

Legislation passed in 2001 required DHSS to promulgate rules and regulations to establish a statewide screening plan. The rules and regulations define criteria for establishing geographic areas in the state considered to be at higher risk for lead poisoning, outline blood lead testing requirements and protocols, and define lead testing follow-up.

In developing these regulations, CLPPP applied Missouri surveillance and census data to establish criteria for High-Risk Testing and General-Risk Testing areas in Missouri. Based upon those criteria, and as required by state statute, the following activities shall occur in these two areas.

In **High-Risk Testing Areas**:

- Any child under the age of six living in or visiting for more than 10 hours per week in the High-Risk Testing or high risk area will be tested annually for lead.
- Childcare facilities located in High-Risk Testing Areas must record a “proof of lead testing” signed by the health care provider within 30 days of the child’s enrollment. The statement must verify that a blood lead test was completed in the previous 12 months. If the parent/guardian does not provide proof or a written statement explaining why they do not want the child tested, the childcare facility is to offer the parent assistance in scheduling a blood lead test.

In **General-Risk Testing Areas** the following activities shall occur:

- From six months to six years of age, every child will be screened annually using the Healthy Children and Youth (HCY) Lead Risk Assessment Guide to determine whether the child is at risk for lead poisoning. Responses given during the screening with the Guide may indicate the need for blood lead testing.

*The HCY Lead Risk Assessment Guide can be viewed at:

<http://health.mo.gov/living/environment/lead/pdf/HCYLeadRiskAssessmentGuide.pdf>.

- Every child less than age six found to be at high risk will be blood tested for lead poisoning.
- All MO HealthNet eligible children shall be assessed by the HCY Lead Risk Assessment Guide and/or be blood lead tested at the ages stipulated by the Federal Program Guidelines (12 months of age, 24 months of age, or 12 to 72 months of age).

An updated Missouri Annual Childhood Lead Testing Area Requirements map is published every year and is available at: health.mo.gov/living/environment/lead/maps.php.

Reporting of Blood Lead Testing

Missouri's diseases and conditions reporting rule ([19 CSR 20-20.020](#)) requires reporting of all blood lead tests both elevated and non-elevated and clarifies demographic patient information required to be submitted with the report. All blood lead test results are required to be reported to the DHSS regardless of the age of the individual or the reported lead level. The data contributes to Missouri's local, regional, and statewide statistics on blood lead poisoning.

The following information is required:

- Date test was conducted
- Type of specimen (capillary or venous)
- Result of the test
- Name and address of the attending physician
- Name of the disease or condition diagnosed or suspected
- Date the test results were obtained
- Patient's complete name and home address with zip code
- Patient's date of birth
- Patient's sex and race

Health care providers should assure that the laboratory they are using is reporting to DHSS.

LeadCare Analyzers

LeadCare Analyzers are portable and easy-to-use instruments that give results of capillary blood lead samples within minutes. These devices allow the patient to receive a result immediately from the tester. LeadCare Analyzers are very convenient for physicians' offices and local health departments. These devices:

- Prevent the patient from possibly being referred to an entirely different location to have the test done.
- Save time that would be spent waiting on lab results.

The use of these instruments has increased for both providers and local public health agencies.

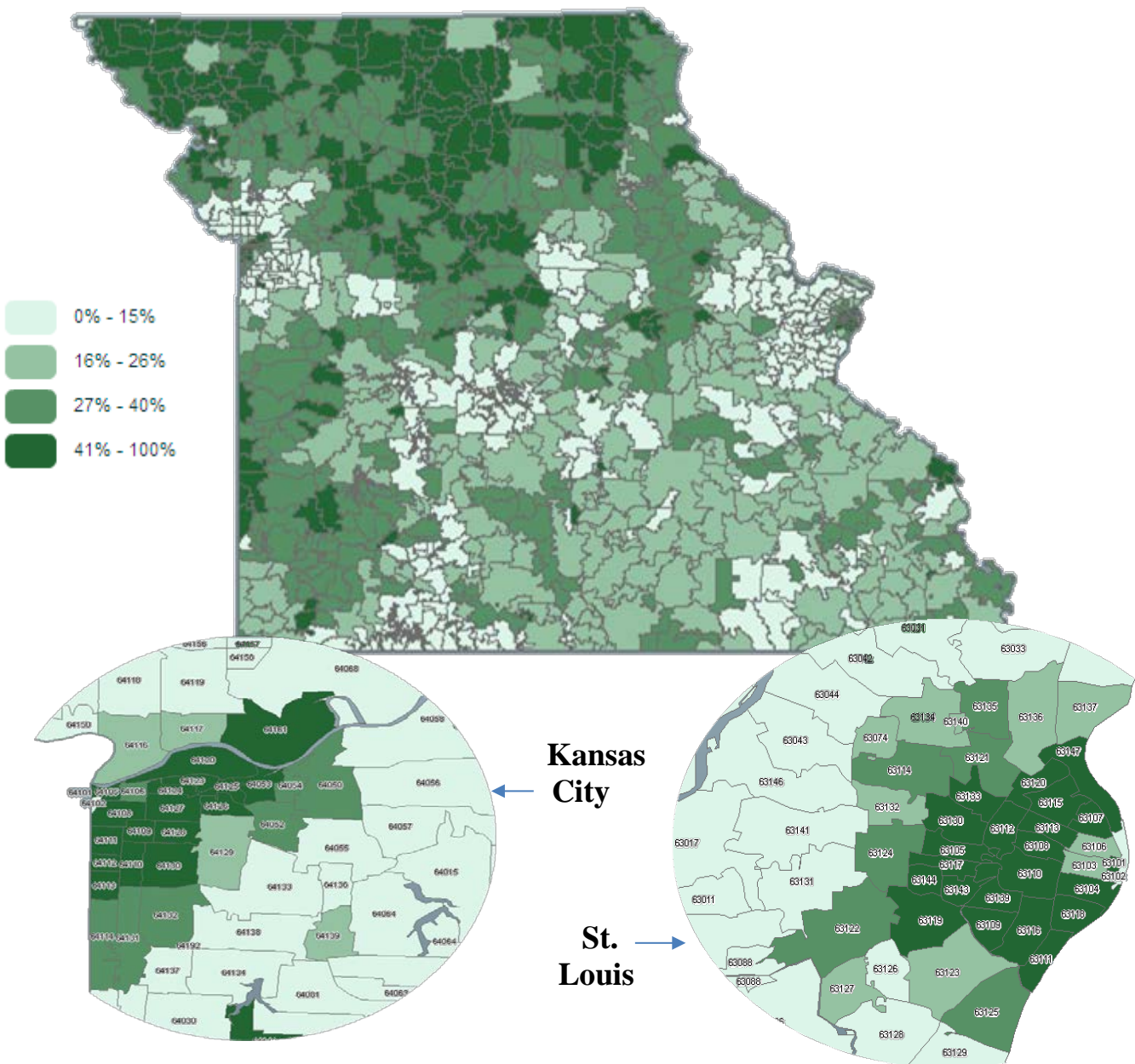
Filter Paper Blood Lead Testing

Filter Paper techniques are acceptable for blood lead testing if health care providers ensure that, as with all blood lead test methods, the chosen laboratory is participating satisfactorily in Clinical Laboratory Improvement Amendments (CLIA) certified proficiency testing (PT) program. Technical assistance is available by contacting the nurse in the DHSS Childhood Lead Poisoning Prevention Program at 573-751-6102.

Housing Risks

Nationally, the average percentage of housing built pre-1950 decreased from 22% in 2000 to 19.6% in 2010. Missouri is above the national average with 21% of housing units built before 1950. The map below lists the percentage of pre-1950 housing by zip code according to the 2000 census data.

Percent of Missouri Pre-1950 Housing by Zip Code



Testing and Prevalence

The number of Missouri's children less than six years old who have been tested for lead poisoning has increased from 50,362 in 2000 to 83,681 in Fiscal Year 2018. Of the children tested, the percentage found to have elevated blood lead levels (10 µg/dL or greater) has declined from 11.1 percent in 2000 to 0.62 percent in 2018. This decrease mirrors a nationwide decrease in children's blood lead levels. In 2018, of the 83,681 children in Missouri who received a blood lead test, 517 had blood lead levels of 10 µg/dL or greater.

Highlights from the Fiscal Year 2018 testing data

- There were 83,681 children tested for lead during Fiscal Year 2018. Of children tested in Missouri, 517 (0.62 percent) had an elevated blood lead level of at least 10 µg/dL.
- The number of children found to have an EBL greater than or equal to 10 µg/dL decreased from 5,588 in 2000 to 517 in 2018.
- 2,036 children tested had blood lead levels between 5 and 9.9 µg/dL (2.4 percent of the 83,681 children tested).
- Total of 2,553 children greater than or equal to 5 µg/dL (3.05 percent of the 83,681 children tested).

A summary of county level blood lead testing data for the period of July 1, 2017, through June 30, 2018, is presented on the following pages.

**Fiscal 2018 CLPPP
Elevated Blood Lead (EBL)
Testing Summary
(July 1, 2017 to June 30, 2018)**

Jurisdiction	5 to 9 (µg/dL)	≥ 10 (µg/dL)	EBL Total	Test Total	EBL Rate	Population of Children < 72 months (2017 5yr ACS)	Percent of Population Tested
ADAIR	x	x	5	233	2.15%	1,516	15.37%
ANDREW	6	0	6	262	2.29%	1,227	21.35%
ATCHISON	7	0	7	42	16.67%	330	12.73%
AUDRAIN	x	x	18	496	3.63%	1,935	25.63%
BARRY	x	x	x	301	1.33%	2,573	11.70%
BARTON	x	x	x	143	2.80%	856	16.71%
BATES	15	5	20	235	8.51%	1,157	20.31%
BENTON	x	x	x	130	3.08%	996	13.05%
BOLLINGER	x	x	5	189	2.65%	815	23.19%
BOONE	x	x	18	2,331	0.77%	12,531	18.60%
BUCHANAN	82	23	105	1,492	7.04%	6,777	22.02%
BUTLER	x	x	x	770	0.52%	3,270	23.55%
CALDWELL	5	0	5	136	3.68%	626	21.73%
CALLAWAY	x	x	7	493	1.42%	2,996	16.46%
CAMDEN	x	x	10	281	3.56%	2,567	10.95%
CAPE GIRARDEAU	17	5	22	753	2.92%	5,441	13.84%
CARROLL	x	x	x	156	2.56%	639	24.41%
CARTER	x	x	x	91	1.10%	451	20.18%
CASS	x	x	14	1,112	1.26%	7,621	14.59%
CEDAR	6	0	6	140	4.29%	1,140	12.28%
CHARITON	x	x	5	114	4.39%	558	20.43%
CHRISTIAN	x	x	8	953	0.84%	6,552	14.55%
CLARK	x	x	11	104	10.58%	473	21.99%
CLAY	36	6	42	2,900	1.45%	18,943	15.31%
CLINTON	6	0	6	240	2.50%	1,424	16.85%
COLE	28	0	28	809	3.46%	5,571	14.52%
COOPER	x	x	x	240	1.67%	1,160	20.69%
CRAWFORD	x	x	x	321	1.25%	1,696	18.93%
DADE	x	x	x	100	3.00%	455	21.98%
DALLAS	x	x	x	196	0.51%	1,279	15.32%
DAVIESS	x	x	x	133	2.26%	641	20.75%
DEKALB	x	x	x	118	0.85%	709	16.64%
DENT	x	x	8	238	3.36%	1,127	21.12%
DOUGLAS	7	0	7	227	3.08%	891	25.48%
DUNKLIN	5	0	5	528	0.95%	2,580	20.47%

Jurisdiction	5 to 9 (µg/dL)	≥ 10 (µg/dL)	EBL Total	Test Total	EBL Rate	Population of Children < 72 months (2017 5yr ACS)	Percent of Population Tested
FRANKLIN	16	5	21	849	2.47%	7,604	11.17%
GASCONADE	x	x	8	188	4.26%	911	20.64%
GENTRY	x	x	x	122	2.46%	579	21.07%
GREENE	60	15	75	3,197	2.35%	21,001	15.22%
GRUNDY	x	x	8	147	5.44%	871	16.88%
HARRISON	x	x	x	91	3.30%	665	13.68%
HENRY	x	x	10	247	4.05%	1,571	15.72%
HICKORY	x	x	x	84	2.38%	478	17.57%
HOLT	x	x	7	80	8.75%	266	30.08%
HOWARD	6	0	6	150	4.00%	722	20.78%
HOWELL	5	0	5	360	1.39%	3,085	11.67%
IRON	x	x	21	239	8.79%	617	38.74%
JACKSON	322	105	427	12,706	3.36%	55,961	22.71%
JASPER	62	17	79	2,423	3.26%	10,022	24.18%
JEFFERSON	x	x	18	1,667	1.08%	16,142	10.33%
JOHNSON	x	x	18	377	4.77%	4,055	9.30%
KANSAS CITY	298	89	387	8,974	4.31%	40,849	21.97%
KNOX	x	x	x	48	2.08%	292	16.44%
LACLEDE	x	x	9	495	1.82%	2,886	17.15%
LAFAYETTE	x	x	5	491	1.02%	2,276	21.57%
LAWRENCE	12	5	17	434	3.92%	3,008	14.43%
LEWIS	x	x	9	154	5.84%	692	22.25%
LINCOLN	8	0	8	547	1.46%	4,597	11.90%
LINN	x	x	x	145	2.07%	890	16.29%
LIVINGSTON	8	0	8	230	3.48%	1,029	22.35%
MCDONALD	x	x	5	262	1.91%	1,922	13.63%
MACON	x	x	7	214	3.27%	1,075	19.91%
MADISON	x	x	19	293	6.48%	886	33.07%
MARIES	x	x	x	79	1.27%	527	14.99%
MARION	28	6	34	564	6.03%	2,193	25.72%
MERCER	x	x	x	32	3.13%	271	11.81%
MILLER	x	x	x	226	1.33%	1,876	12.05%
MISSISSIPPI	x	x	x	347	1.15%	841	41.26%
MONITEAU	x	x	7	192	3.65%	1,285	14.94%
MONROE	x	x	x	105	2.86%	577	18.20%
MONTGOMERY	x	x	5	222	2.25%	782	28.39%
MORGAN	x	x	8	292	2.74%	1,530	19.08%
NEW MADRID	8	0	8	399	2.01%	1,313	30.39%
NEWTON	x	x	36	862	4.18%	4,351	19.81%
NODAWAY	11	5	16	301	5.32%	1,233	24.41%

Jurisdiction	5 to 9 (µg/dL)	≥ 10 (µg/dL)	EBL Total	Test Total	EBL Rate	Population of Children < 72 months (2017 5yr ACS)	Percent of Population Tested
OREGON	x	x	x	175	1.71%	760	23.03%
OSAGE	x	x	x	171	2.34%	959	17.83%
OZARK	0	0	0	96	0.00%	500	19.20%
PEMISCOT	x	x	x	227	1.32%	1,483	15.31%
PERRY	x	x	x	214	0.93%	1,377	15.54%
PETTIS	x	x	36	609	5.91%	3,487	17.46%
PHELPS	6	0	6	547	1.10%	3,061	17.87%
PIKE	x	x	17	252	6.75%	1,360	18.53%
PLATTE	x	x	10	989	1.01%	7,566	13.07%
POLK	x	x	13	431	3.02%	2,271	18.98%
PULASKI	8	0	8	325	2.46%	4,149	7.83%
PUTNAM	x	x	x	78	5.13%	355	21.97%
RALLS	x	x	9	181	4.97%	602	30.07%
RANDOLPH	x	x	20	346	5.78%	1,681	20.58%
RAY	x	x	x	410	0.98%	1,557	26.33%
REYNOLDS	x	x	x	76	3.95%	350	21.71%
RIPLEY	6	0	6	198	3.03%	1,025	19.32%
ST CHARLES	x	x	9	1,924	0.47%	28,853	6.67%
ST CLAIR	x	x	x	52	5.77%	575	9.04%
STE GENEVIEVE	x	x	x	186	2.15%	1,200	15.50%
ST FRANCOIS	36	7	43	533	8.07%	4,410	12.09%
ST LOUIS	189	44	233	14,204	1.64%	70,263	20.22%
SALINE	18	7	25	379	6.60%	1,632	23.22%
SCHUYLER	x	x	x	87	3.45%	396	21.97%
SCOTLAND	0	0	0	30	0.00%	544	5.51%
SCOTT	x	x	16	747	2.14%	2,976	25.10%
SHANNON	x	x	x	48	2.08%	504	9.52%
SHELBY	x	x	5	163	3.07%	454	35.90%
STODDARD	6	0	6	473	1.27%	2,059	22.97%
STONE	x	x	x	182	1.65%	1,513	12.03%
SULLIVAN	x	x	7	212	3.30%	475	44.63%
TANEY	x	x	x	382	0.52%	3,759	10.16%
TEXAS	x	x	x	213	1.41%	1,730	12.31%
VERNON	10	0	10	222	4.50%	1,553	14.29%
WARREN	x	x	x	348	1.15%	2,648	13.14%
WASHINGTON	15	5	20	214	9.35%	1,785	11.99%
WAYNE	x	x	x	164	1.83%	897	18.28%
WEBSTER	x	x	9	399	2.26%	3,455	11.55%
WORTH	x	x	6	34	17.65%	134	25.37%
WRIGHT	8	0	8	377	2.12%	1,522	24.77%

Jurisdiction	5 to 9 (µg/dL)	≥ 10 (µg/dL)	EBL Total	Test Total	EBL Rate	Population of Children < 72 months (2017 5yr ACS)	Percent of Population Tested
ST LOUIS CITY	498	151	649	9,915	6.55%	23,116	42.89%
MISSOURI	2,036	517	2,553	83,681	3.05%	449,401	18.62%

Confidentiality: The "x" symbol indicates the confidentiality rule < 5 has been triggered.

Note: *Kansas City's tests are counted in the Kansas City row, and the Cass, Clay, Jackson, and Platte rows. The Kansas City row is not included in the Missouri column totals.*

Lead Poisoning Prevention Education

CLPPP develops an educational campaign and distributes materials to advocates statewide each year. The campaign goal is to provide stakeholders with the tools necessary to promote lead poisoning prevention. Themes, fact sheets, posters, and public service announcements are examples of campaign materials. The materials are used during lead poisoning prevention month to intensify the statewide effort.

Several educational brochures and fact sheets that focus on specific lead related issues such as *Pregnancy and Lead Poisoning* and *A Health Care Provider's Guide to Lead Screening and Testing Requirements* are also available and can be ordered for community-wide use.

Educational materials are also available and displayed at health fairs, home shows, blood lead testing events, and other public events when possible. Display boards provide visitors with lead poisoning prevention posters, signs, facts, and other educational materials. The display boards are helpful to capture people's attention and draw them in to learn about other healthy homes topics such as radon and mold.

Lead Poisoning Prevention Week (observed in October) campaign information, newsletters, fact sheets, booklets, and other publications are all available to the public on the CLPPP webpage. The webpage also features: upcoming events, lead testing guidelines, Missouri Annual Childhood Lead Testing Area Requirements maps, product recalls, data and statistical reports, laws, regulations, and manuals. CLPPP personnel worked with St. Joseph, St. Francois, Johnson, Audrain, and Gentry Tri-Counties testing for blood lead levels on children less than 72 months during their monthly Women, Infant, and Children (WIC) events. The team also attended a Lead Poisoning Prevention Webinar.

Collaborations

Case Management Services

Case management of children with EBL levels involves coordinating, providing, and overseeing the services required to help reduce the child's blood lead level. During fiscal year 2018, case managers strived to reduce EBL levels to less than 10 µg/dL. It is based on the efforts of an organized team and is child, physician, and family centered. Lead case management services may be provided by the child's primary care physician, LPHA, or a MO HealthNet Managed Care health plan. At times, other disciplines, such as behavioral health, are part of the case management system. In some cases, interpretive services may be indicated and these individuals will also interact with lead case managers. DHSS Childhood Lead Poisoning Prevention staff, along with MO HealthNet and LPHA staff, monitors case management for children identified with a blood lead level greater than or equal to 10 µg/dL. The MOHSAIC system is used to provide a centralized documented record of communications, results, case management interventions, and updated demographic information. This promotes the sharing of the findings and promoting unified support of suggested interventions made by the risk assessors following environmental investigation results.

Environmental Services

The CLPPP provides lead risk assessment services to detect hazardous sources of lead exposure in children's homes. This service is provided for children age six and younger who have a confirmed venous blood lead level of 15 µg/dL or greater and is offered at 5 µg/dL.

A risk assessment is conducted by a professional, trained and licensed by the DHSS Lead Licensing Program. The assessor consults with the child's family to determine areas of the home where the child may come into contact with lead. X-ray Fluorescence Analyzers (XRFs) are used to analyze painted surfaces and household objects. Dust, soil, and water samples are collected to determine if and where lead hazards exist. Upon completing the assessment and receiving the lab analysis, the risk assessor provides the property owner and/or occupant (if other than the owner) with recommendations for reducing lead hazards. The risk assessor revisits the home at an agreed-upon time to assure lead hazard reduction has been accomplished. The risk assessor collaborates with the child's parent or legal guardian, property owner, LPHA or MO HealthNet lead case manager, DHSS CLPPP staff, and the child's physician as indicated, as part of their role in case management of the elevated child. Risk assessment reports are also accessible to team members if a risk assessment was conducted on a child with a blood lead level of 5 µg/dL or greater.

Healthy Homes

Since the beginning of the "Is Your Home Healthy?" exhibit in 2007, the exhibit has been adapted for use at a variety of events throughout the state. The main exhibit focuses on the Healthy Indoor Environments unit in the Bureau of Environmental Epidemiology. The primary programs highlighted are the Childhood Lead Poisoning Prevention Program and the Indoor Air/Radon Program. Information is available on a variety of topics including lead poisoning prevention, radon and mold remediation, the fish consumption advisory, carbon monoxide poisoning prevention, heat and cold illness prevention, mercury handling and disposal, and other environmental health topics as appropriate for the event and audience. Coloring and activity books, magnets, and stickers are available to capture the interest of guardians and children. Employees from various DHSS programs work the exhibit and are available to answer questions about environmental health concerns from citizens. The exhibit also features hand washing information from the Bureau of Communicable Disease Control and Prevention along with tick and mosquito repellent information from the Vector Borne Disease Program.

Between July 1, 2017, and June 30, 2018, "Is Your Home Healthy?" was displayed at 51 different venues across the state and provided 12,000 handouts. These included the new Local Public Health Administrators training; St. Louis, Kansas City, and Jefferson City Home Builders Association Home Shows; Missouri School Nurse Conference; Missouri Environmental Educator Conference; and school and community health fairs.

The "Is Your Home Healthy?" exhibit is an ongoing collaborative effort between the Bureau of Environmental Epidemiology programs, the Bureau of Communicable Disease Control and Prevention, the Vector Borne Disease Program, and the local health departments. This outreach effort continues to help build partnerships with outside organizations such as Parents as Teachers, child advocates, school nurses, contractors, environmental health professionals, senior citizen groups, and parents. At the same time, it provides valuable information to and helps educate the citizens of Missouri about environmental hazards in their homes.

Agency for Toxic Substance and Disease Registry (ATSDR)/Environmental Protection Agency (EPA)/Missouri Department of Natural Resources (MDNR)

Lead mining, milling, and smelting have occurred throughout the lower half of Missouri. Missouri ranks as the top lead-producing state in the nation. Across the state, there are 60 counties that are potentially impacted by lead mining-related activities.

Historical lead mining, milling, and processing have resulted in innumerable tons and acres of waste products, such as tailings and chat. Over time, tailings and chat have migrated into the surrounding communities. The migration has been caused by wind or water erosion, as well as human activities, such as using the lead waste as fill material in yards, driveways, and sandboxes or using the chat for traction along roads in winter. Because of the lead mine waste and the resulting contamination into nearby communities, Missouri has many sites placed on the Environmental Protection Agency (EPA) National Priorities List (NPL) for remediation. In St. Francois County, six large mine tailings and chat piles from past mining and milling operations are located near residential areas. Other major lead mining sites that have been placed on the NPL due to residential contamination include Madison and Jefferson counties; sites in Newton, Jasper, and Iron counties; and four sites in Washington County. The lead smelter in Herculaneum, Missouri, ceased operation on December 31, 2013. The smelter processed lead concentrate from active mining and milling operations in nearby counties into lead ingots for use in consumer products like batteries and computers. Lead contamination resulting from the smelter operations is also being addressed in the community of Herculaneum.

DHSS, along with other state, local, and federal agencies (including ATSDR, EPA, and MDNR), is addressing these sites to protect public health. Multiple actions have been taken to reduce human exposure and prevent lead poisoning, especially to children less than six years old. Some of the actions taken by partnering agencies at the various sites to reduce exposure include monitoring of: air; sampling of soil, water, and dust; stabilization of the tailings piles; yard soil removals; street cleanings; interior home cleaning; reduction in smelter air emissions; and special blood lead testing events. Additional activities conducted by DHSS include health studies, health consultations, public health assessments, and ongoing educational activities.

Brownfield Project

Vast areas of Missouri may have high levels of lead in soil and/or groundwater due to naturally occurring lead deposits and from past and present lead mining and production. Given the recent rapid expansion of urban sprawl, many previously undeveloped properties are now being looked at by developers for residential housing and other types of increased land use. Development of this nature on mining-impacted lands potentially exposes new populations to lead and other heavy metal contaminants.

Under a grant from ATSDR, DHSS acted to increase testing for lead in drinking water by working with the State Public Health Laboratory to add lead to its list of analytes included in the New Well Series for private drinking water supplies and by recommending actions that local public health agencies can take to increase testing. DHSS also developed health education materials to promote water testing for lead. To assist in responding to homeowner concerns for those identified with lead impacts to their drinking water system, a lead in drinking water fact sheet was developed that can be provided along with test results with recommendations for reducing exposure. These health education materials can be found at:

<http://health.mo.gov/living/environment/lead/publications.php#gov>.

DHSS Lead Licensing Program

The Lead Licensing Program is responsible for licensing individuals to conduct lead abatement, inspections, and risk assessments. Employees of this section may make unannounced site visits to check that all individuals have the proper current license and that lead abatement is being conducted correctly and safely. This is to ensure the safety of the residents who may not know the harmful effects of improper lead abatement work practices. Like CLPPP, the Lead Licensing Program plays an important role in keeping people healthy and safe from lead poisoning. All risk assessors that are a part of CLPPP are licensed and overseen by the Lead Licensing Program.

Missouri Department of Social Services (MDSS), MO HealthNet Division (MHD)

Poverty is one major risk factor for lead poisoning. DHSS and MHD have had a cooperative agreement in place since 1998. This agreement outlines the agencies' mutual objectives regarding childhood lead poisoning to: 1) assure that MO HealthNet eligible children are screened/tested according to the Statewide Lead Testing Plan; and 2) assure that medically necessary services are provided for MO HealthNet eligible children whether by a MO HealthNet enrolled provider or a MO HealthNet Managed Care health plan for the correction or amelioration of lead poisoning related conditions identified through a full or partial Early Periodic Screening Diagnosis and Treatment. During fiscal year (FY) 2017, MO HealthNet staff assessed the current MO HealthNet status of all Missouri children with confirmed blood lead levels 10 µg/dL or greater. MO HealthNet staff generates a health plan specific report of elevated health plan members that is forwarded to each health plan lead case manager for case management of the elevation. Lead case management activities are documented by the health plan lead case managers, directly into the MOHSAIC Lead Case Management Application. This documentation helps to facilitate greater and timelier communication regarding follow-up of these cases among the MO HealthNet Managed Care health plans, MHD, DHSS, and the LPHAs. DHSS's staff representation on the Central Area Headstart Advisory Committee provides opportunities for education and outreach regarding lead poisoning awareness and prevention activities in the community.

Women, Infant, and Children (WIC) Program

High blood lead levels that affect intelligence, behavior, and the development of children less than six years of age disproportionately affect minority and poor children. The Special Supplemental Nutrition Program for WIC is an important partner in efforts to combat the health risks of lead poisoning. By identifying high-risk children through a screening process during WIC clinic visits, referring children to their primary care provider for testing, or making blood lead testing available on-site, the likelihood that more children will be blood lead tested is improved. This practice also helps to identify elevated children, as well as initiate timely and appropriate follow-up care.

Missouri Department of Economic Development (DED)

The Missouri Department of Economic Development FY 2013-2017 Consolidated Plan produced by DED includes Targeted and Universal Testing Area maps, blood lead testing data by county, and percentage of pre-1950 housing data for the state. The document also contains the Missouri Housing Development Commission's lead-based paint policies and procedures and the Home Repair (HERO) Program's and HOME Rental Production Program's lead-based paint reference guide.

Missouri Local Public Health Agencies (LPHAs)

Many LPHAs offer blood lead testing within their counties. Some agencies offer free blood lead testing or referrals to providers that offer testing. Most of these agencies have a nurse that assists with case management for children who have elevated lead levels; however, this nurse works in collaboration with the child's primary care physician, parent or guardian, managed health care plan (if the child is enrolled), and environmental risk assessors. DHSS CLPPP staff collaborates with LPHA staff on elevated lead cases to provide initial and ongoing technical assistance regarding lead case management activities, as well as environmental risk assessment. Lead poisoning education and outreach is often offered at the LPHA level at health fairs, through physician offices, childcare facilities, and upon request. LPHAs utilize lead poisoning prevention campaigns to assist in raising community awareness regarding lead poisoning and its health effects. LPHAs are often a primary contact for parents of children attending childcare facilities where proof of lead testing is required. This is typically a convenient access point for lead testing and opportunity for provision of educational lead information to families. The DHSS CLPPP also provides these agencies with educational materials and technical assistance for other related issues such as the use of the MOHSAIC application, lead case management training, and current program and regulatory requirements. The support and ongoing efforts of the LPHAs regarding childhood lead poisoning and its prevention play a key role in the primary goal to eliminate childhood lead poisoning.

St. Louis City, St. Louis County, and Kansas City are Missouri's three largest metropolitan areas. According to 2018 surveillance data, these three areas combined contain 56.4 percent of Missouri's children with elevated blood lead levels equal to or greater than 5 ug/dL (1,441 of 2,553). These three areas along with Jasper County, Greene County, and Jefferson County have lead poisoning prevention programs that are managed by the LPHAs. To decrease the prevalence of EBLs in these areas, DHSS collaborates with these LPHAs, who provide lead poisoning prevention educational activities, assure case management, and provides environmental risk assessments.

DHSS collaboration efforts include loaning department-owned XRFs to three LPHAs for lead-related work activities. Jefferson County and Jasper County each have lead poisoning prevention programs where the XRFs are utilized. Madison County has an ongoing project using the XRF to measure lead levels in soil. The department was able to loan an XRF to each of these counties, as they were not able to purchase their own XRFs for their programs. The loaning of the XRFs to these lead programs provides a fast, accurate alternative for those programs to identify lead hazards and promote the remediation of those hazards.

For more information on lead poisoning prevention contact:

Missouri Department of Health and Senior Services
Bureau of Environmental Epidemiology
930 Wildwood Drive
Jefferson City, MO 65109
Phone: (573) 751-6102 or (866) 628-9891

Or visit our website at:

<http://health.mo.gov/living/environment/lead/index.php>